ABSTRACT

Semiconductor devices containing a MOSFET and an on-chip current sensor in the form of a magnetic resistive element are described. The magnetic resistive element (MRE) is proximate the MOSFET in the semiconductor device. The current flowing through the MOSFET generates a magnetic field that is detected by the MRE. The MRE comprises a metal film that is placed proximate the MOSFET during the normal fabrication processes, thereby adding little to the manufacturing complexity or cost. Using the MRE adds an accurate, effective, and cheap method to measure currents in MOSFET devices.